A Multi-Criteria Geospatial Analysis of Portland, OR Neighborhoods: The Good, the Bad and the Green

Green Space Analysis

ORCA – Oregon Recreation and Conservation Areas:
1. <u>Park</u> *(Weight Given - 40)*
2. <u>Home Owners Association</u> - *(2)*
3. <u>Natural Areas</u> - *(20)*
4. <u>Cemetery</u> - *(2)*
5. <u>School Land</u> - *(20)*
6. <u>Golf Course</u> - *(15)*
7. <u>Other</u> - *(1)*

Includes: Community centers & pools
     Churches
     Community Gardens
     Racquet and Tennis Clubs

Calculate percentage of **ORCA** areas (**ORCA** area/total area of neighborhood)   New Field created = Weighted Density
- #1*40 + #3*20 + #5*20 + #6*15 + #4*2 + #7*2 + #2*1

*Reclassed* based on density field = 9 density classes become 1-9)

Vegetation
1. <u>Forest</u> - *(Weight Given – 30)*
2. <u>Herbaceous</u> – *(30)*
3. <u>Shrubland</u> – *(25)*
4. <u>Woodland</u> – *(15)*

Calculate percentage of **Vegetation** areas (**Vegetation** area/total area of neighborhood)   New Field created = Weighted Density
- #1*30 + #2*30 + #3*25 + #4*15

*Reclassed* based on density field = 9 density classes become 1-9 (bad - good)
Weighted Overlay: **ORCA** – reclassed (65% influence)
         Vegetation – reclassed (35% influence)
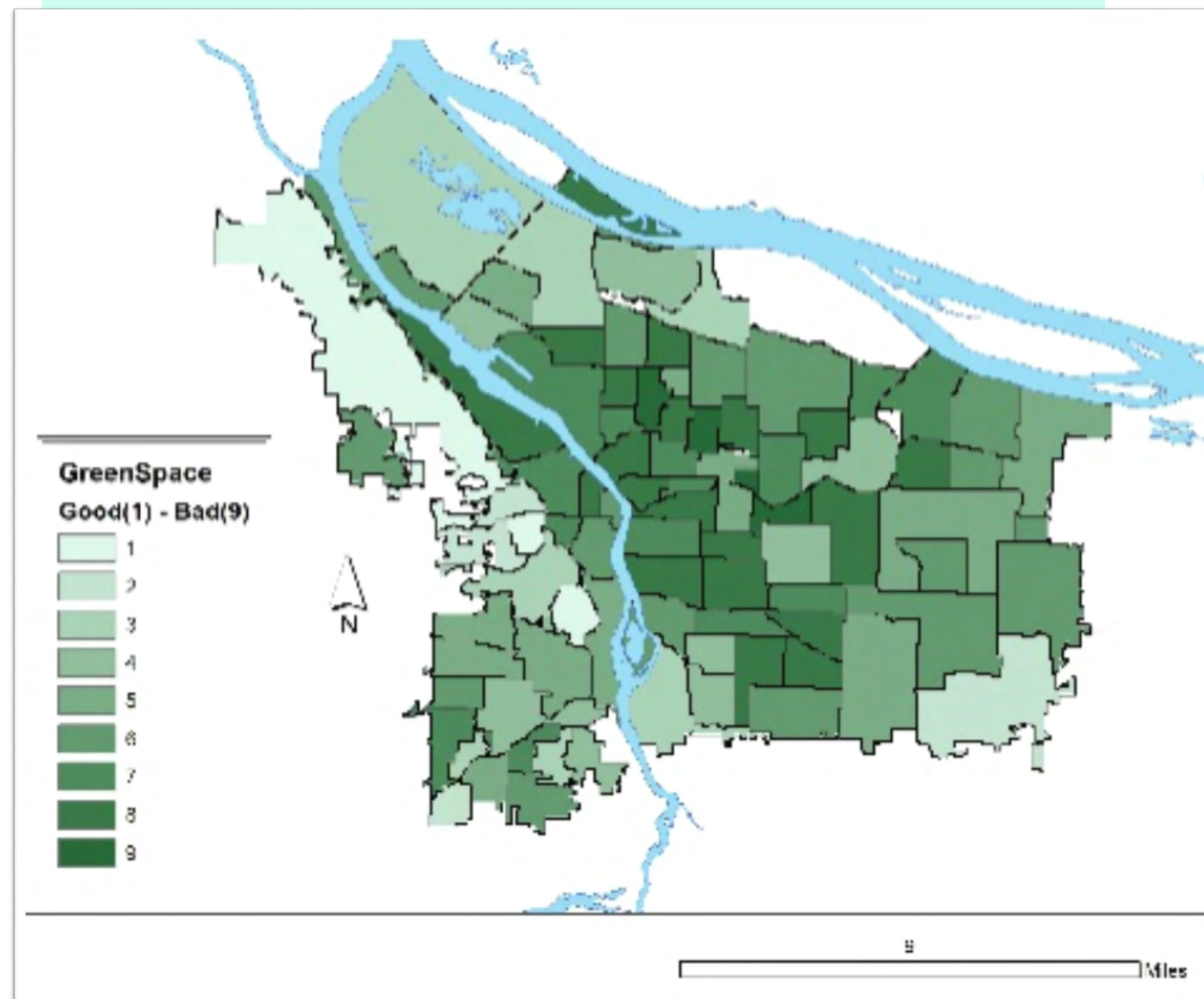
Walk Score

WalkScore Rank, Transit Score, Bike Score, Population) retrieved from Walkscore.com/Portland

"Walk Score utilizes GIS data such as street connectivity, population density, access to public transportation modes, intersection density, U.S Census block group data, and crime data along with a geography-based algorithm to measure neighborhood/city walkability based on distance to 13 categories of amenities (grocery stores, coffee shops, restaurants, bars, movie theaters, schools, parks, libraries, clothing/music stores, fitness centers, drugstores, hardware stores). The 13 amenities are equally weighted and points are summed and normalized to reveal a Walk Score ranging from 0 - 100 (Carr et al, 460).
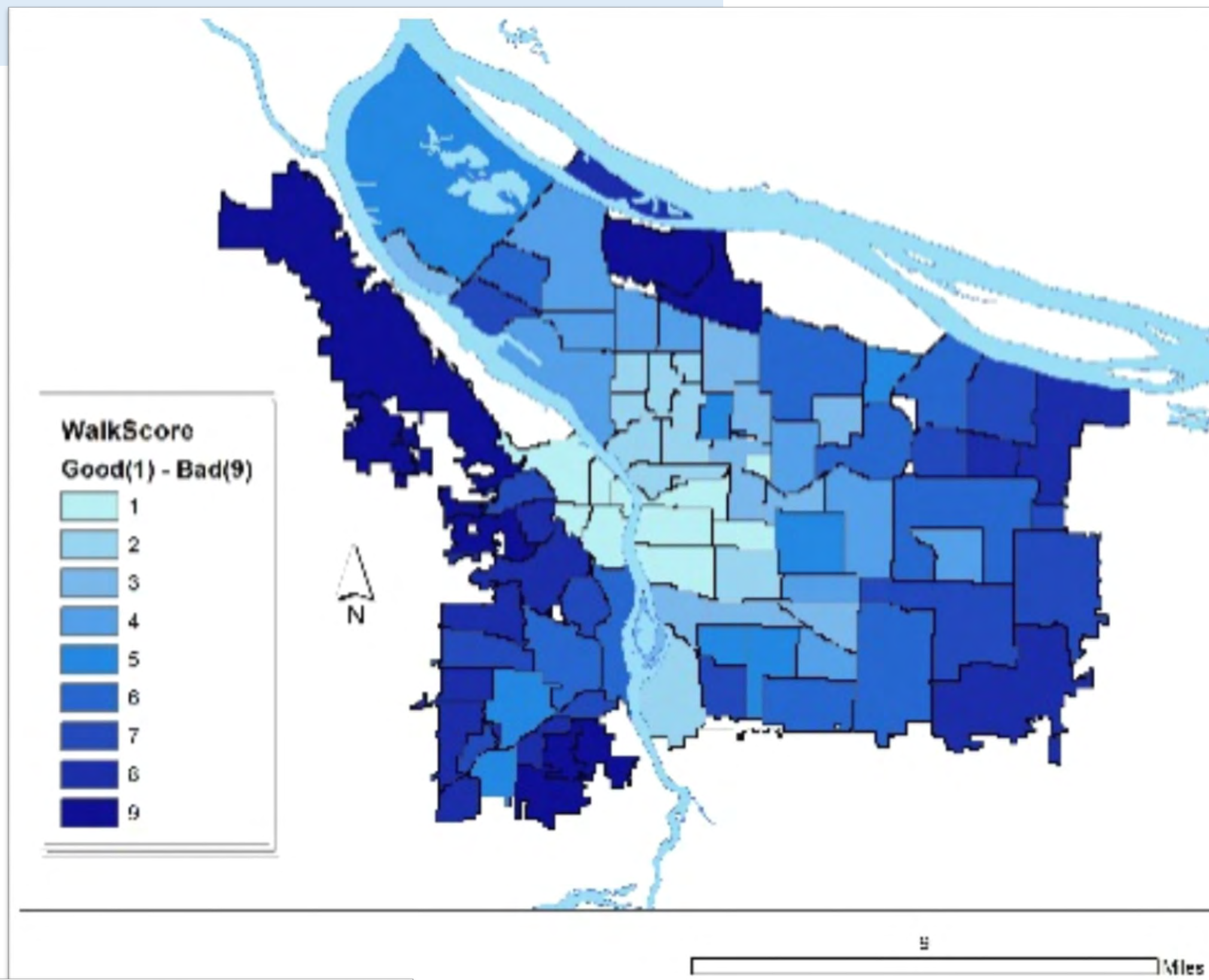
Crime Analysis

2009-2013 Crime data source: CivicApps.org

Analysis inclusive to five most recent years of crime data ('09-'13) merged in a DBASE. Crimes not associated with a neighborhood (highway DUI incidents) were queried out
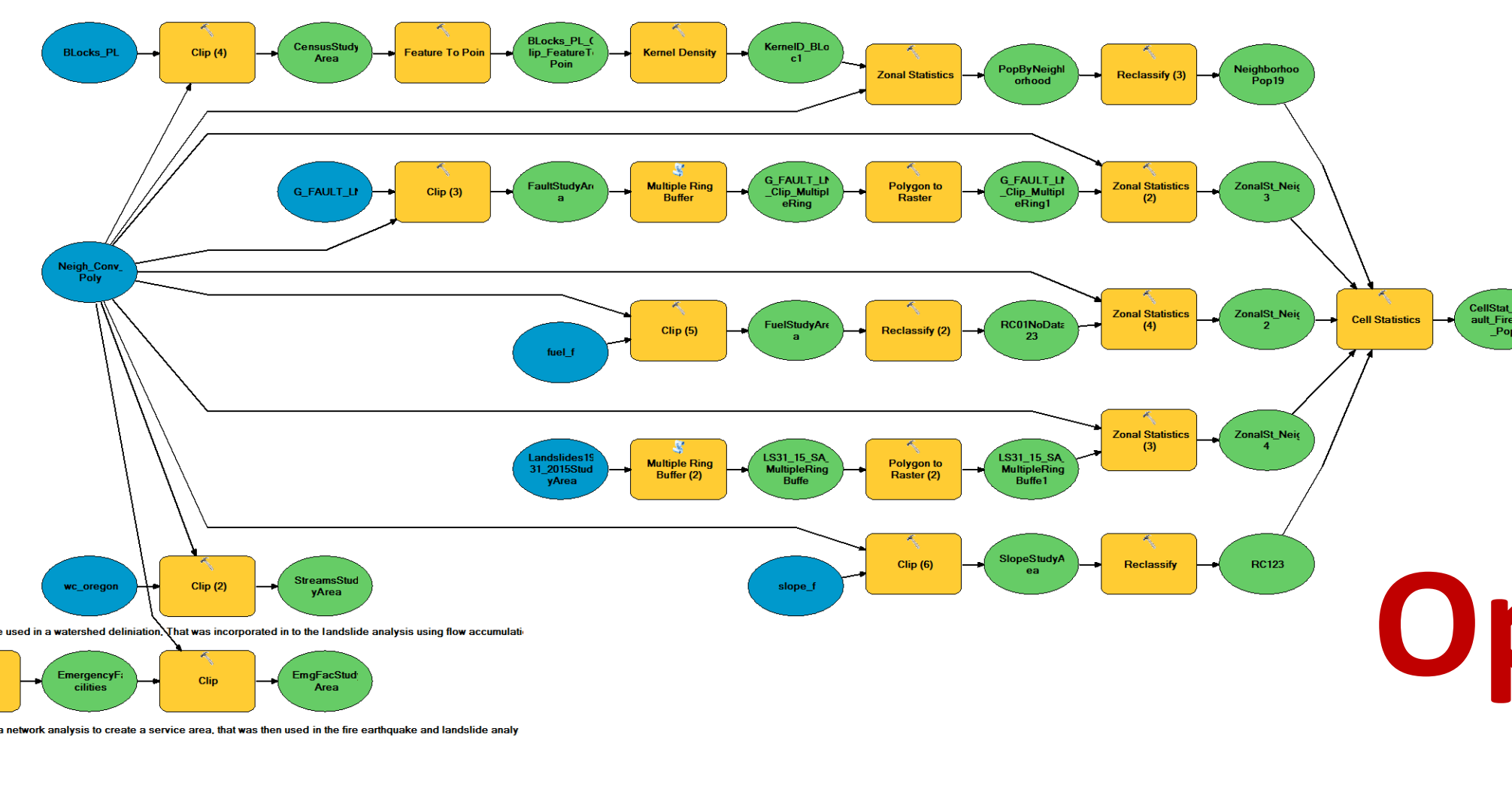
Frequency - Analysis Tool used to generate a table with the frequency of crime incidents in each neighborhood.
Joined table to neighborhood layer and symbolized, 9 classes - natural breaks, by frequency of incidents Converted to raster Reclassed neighborhood layer and its 9 classes with a 1(less/good) - 9(more/bad) value

Percentage of Most Frequent Cumulative Crime Occurences Within Study Area
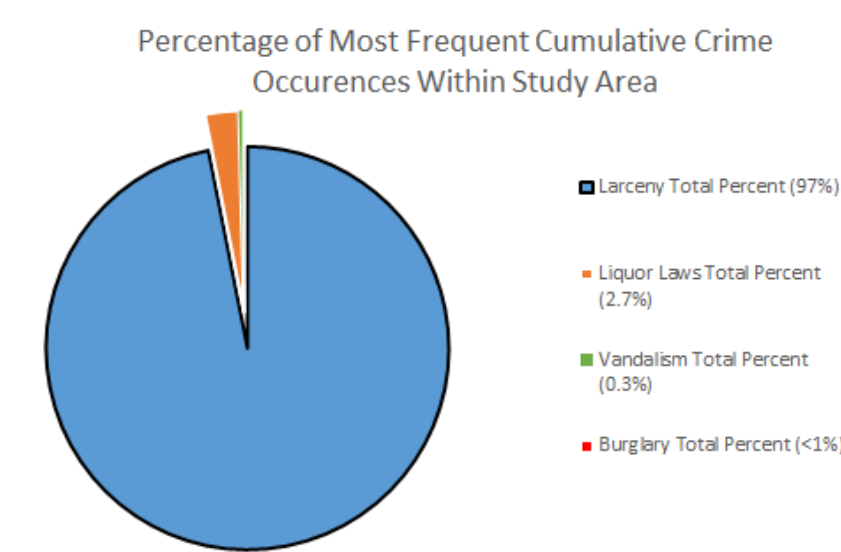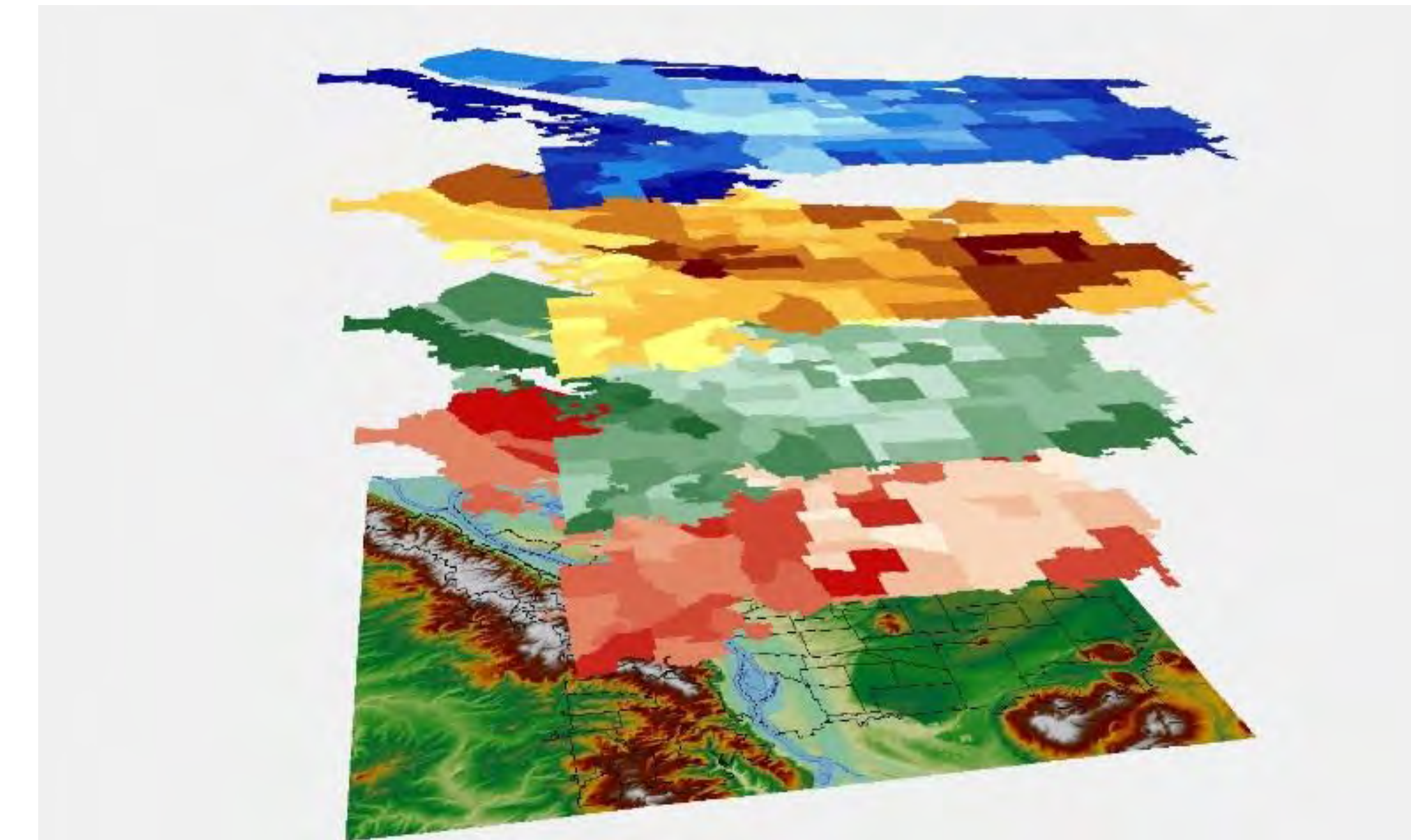
Natural Hazards

Conducting least risk areas for fire, earthquakes, and landslides in Portland's neighborhoods using guided research and historic geology data, hydrography, and topography
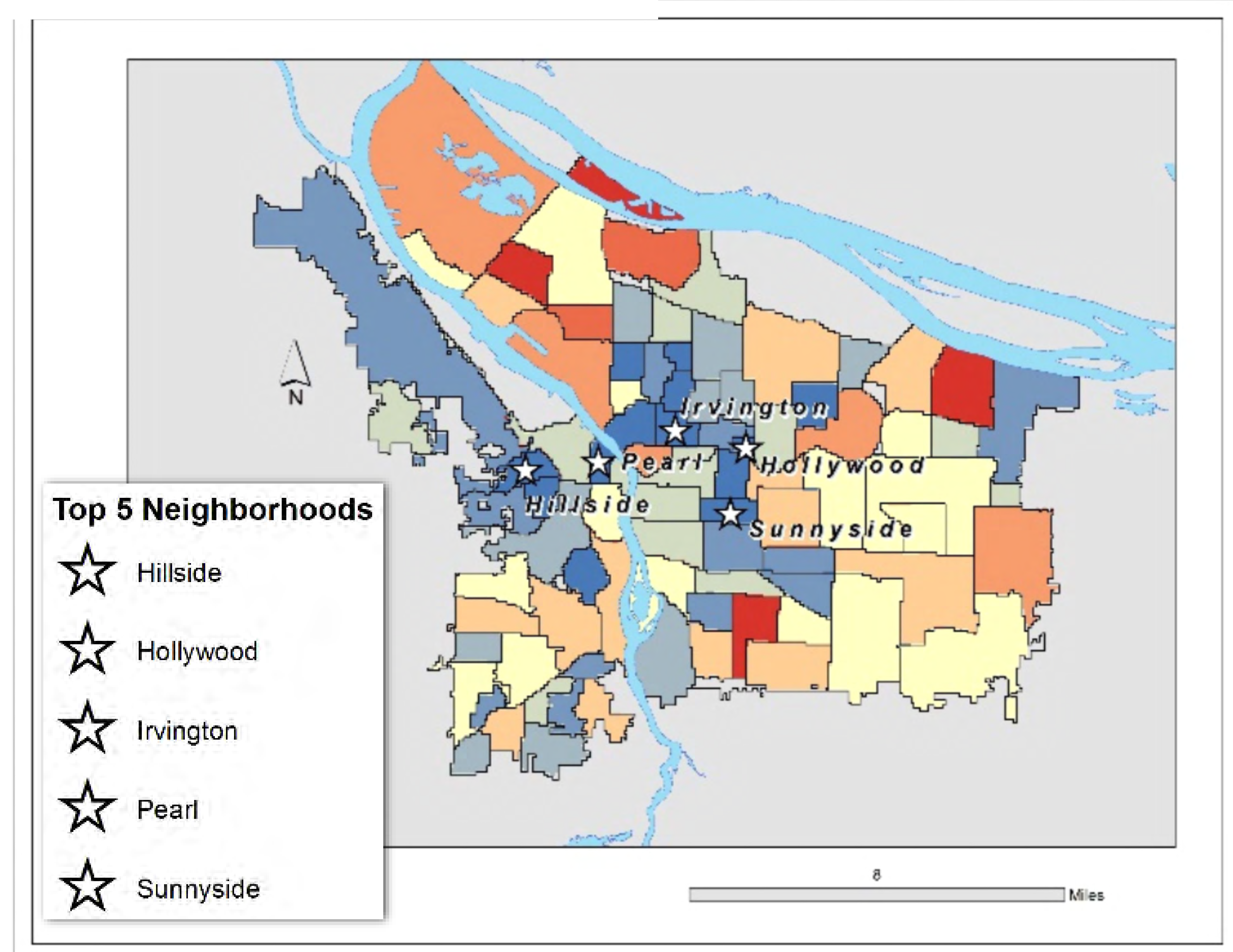
Note: the below diagram does not show the network analysis for the service area of emergency facilities response or the flow accumulation for the hydrography portion of the landslide analysis.

Putting it together

Optimal Neighborhoods

GreenSpace
Good(1) - Bad(9)

WalkScore
Good(1) - Bad(9)

Crime
Good(1) - Bad(9)

NaturalHazards
Good(1) - Bad(9)

Top 5 Neighborhoods
- ★ Hillside
- ★ Hollywood
- ★ Irvington
- ★ Pearl
- ★ Sunnyside

Kyla Blomquist, Jerek Laursen and Emily Rush